Fatigue Analysis of Cable Anchorages on Cable – Stayed Bridges

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ABSTRACT

The cable anchorage blocks that transfer the deck loads to the cables have complex details which significantly influence the long – term fatigue behaviour of cable – stayed bridges in operation. Determination of the stress ranges at one of the most critical parts in the cable anchorage due to traffic loads passing over the bridge is determined by using the finite element (FE) method. This paper investigates three different approaches namely node stress concentration, average elements and the hot-spot method in order to identify the stress ranges that adversely affect the remaining fatigue life of a cable anchorage. Finally, by using the Fatigue Load Model 4 (FLM4) proposed in the Euro code, the proposed fatigue remaining life in cable anchorage is determined and discussed.

KEYWORDS: Long-span bridges